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The implications for education of Peirce's *agapist* principle

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Abstract: In his divisions of science, Peirce placed pedagogy in the branch of practical sciences. This means that the profession of teaching can only be meliorated by experience, through practice. However, I argue that a holistic look at Peirce's semiotics reveals an implicit philosophy of education. The key lies in understanding his account of experience in the context of his theory of evolution. By experience Peirce meant semiosis (action of signs), not the modern empirical notion of experience. The sign, unlike an idea (purely mental entity) does not belong strictly to mental or non-mental phenomena. Experience is a characteristic of the Universe (CP 5.448), understood as a physiology of arguments (Stjernfelt 2007). According to Peirce's taxonomy of signs, learning is the evolution of signification from the Icon sign type to the Argument sign type, being the Universe's way of discovering itself through life forms. The Argument sign type is a result of agapasm, evolution due to creative love (CP 6.302). The paper explains how Peirce's theory of agapistic evolution underpins an educational paradigm.

Keywords: agapism, evolution, semiosis, education, sign

This paper applies Peirce's *agapistic* principle of evolution to education. Charles Peirce's semiotics implies an experience based philosophy of education. Therefore, to understand Peirce's stand regarding education, an investigation of his notion of experience is necessary. Peirce's idea that pedagogy is a practical science (CP 1.243) implies that no theoretical framework can improve one's teaching practice. However, Peirce left one main piece of advice for teachers. This recommendation is found in his theory of evolution, and it is the cornerstone of his mature semiotics: that the fulfillment of experience is agapic, which he calls the Golden Rule (CP 6.288). This means that learning is the manifestation of love.

I develop the argument in four stages. First, I explain Peirce's pragmatic notion of experience and its coextensiveness with biosemiotics. In the second

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stage I explain that, for Peirce, pedagogy is a practical science. The third stage consists in explaining the implications of an evolutionary semiotics to learning. Finally, I explain that Peirce's practical pedagogy and his semiotics have the same cornerstone, namely, the fulfilment of experience in *agapic* love.

1 Peirce's pragmatic understanding of experience

Experience, on a Peircean account, is semiosis, a triadic cooperation: "... by 'semiosis' I mean... an action, or influence, which is, or involves, a coöperation of *three* subjects, such as a sign, its object, and its interpretant, this tri-relative influence not being in any way resolvable into actions between pairs" (CP 5.484).

These three subjects, the sign-vehicle, or representamen (a quality), its object (reaction) and an interpretant (mediation) together constitute a sign-relation. Semiosis is always infinite, as any interpretant implies a relation to another interpretant and so on: "A REPRESENTAMEN is a subject of a triadic relation TO a second, called its OBJECT, FOR a third, called its INTERPRETANT, this triadic relation being such that the REPRESENTAMEN determines its interpretant to stand in the same triadic relation to the same object for some interpretant" (CP 1.541).

This is the cornerstone of Peircean semiotics, and, therefore, of a Peircean educational philosophy. Strand explained that on Peirce's account of experience as semiosis "we are dealing with a philosophy *in* experience" (Strand 2014: 436), and not merely a philosophy of experience. Peirce clearly stated that we only learn by experience. When stating this he also added that this account of learning, of knowledge acquisition does not imply the *tabula rasa* assumption: "Experience is our only teacher. Far be it from me to enunciate any doctrine of a *tabula rasa*" (CP 5.50).

The main difference between Peirce and other pragmatists of his time is that Peirce regarded pragmatism as a principle of logic that allowed him to develop a relational logic, semiotics, while other pragmatists, such as William James or John Dewey, did not focus on the action of signs, developing an account of pragmatism as radical (extreme) empiricism (James 1907a; CP 3.414). Both of these accounts of pragmatism aim at overcoming modern dualisms, such as the separation of mind and matter.

Both versions of pragmatism, radical empiricism and semiotics, offer an experience focused philosophy of education. Peirce's follower, John Dewey, was the first to develop a thorough pragmatic philosophy of education (1969,

1997 [1938]). Pragmatic semiotics offers particular insights for philosophy of education, on the account of experience as semiosis. Using Peirce's notions of sign and semiosis and his taxonomy of signs this paper explains education in the light of Peirce's theory of evolution. The conclusion is that, according to Peirce, the rationale of education is self-sacrificial love (*agapism*). This is justified, in Peirce's teleological and evolutionary semiotics, because the principles of chance and necessity, while fundamental for learning, can be and are only overcome by (*agapic*) love.

Pragmatism, at least in its early stages, was characterized by its emphasis on a new understanding of experience, distinct from the mainstream, modern empiricist or rationalist account. One of the novelties brought by pragmatism that James explained is the strong awareness that experience is continuous, a *stream*: "You must bring out of each word its practical cash-value, set it at work within the stream of your experience. It appears less as a solution, then, than as a program for more work, and more particularly as an indication of the ways in which existing realities may be *changed*" (James 1907b: 53).

Dewey considered that a consciousness that contains successive but interrupted experiences is pathological (1997 [1938]: 44). Semiosis, as well, is continuous (Stjernfelt 2007: Ch. 1; Bellucci 2013). Peirce explained what the pragmatic account of experience offers new by contrasting it with John Mill's utilitarianism:

> If Mill wishes me to admit that *experience* is the only source of any kind of knowledge, I grant it at once, provided only that by experience he means *personal history*, life. But if he wants me to admit that inner experience is nothing, and that nothing of moment is found out by diagrams, he asks what cannot be granted. (CP 4.91)

The pragmatic notion of experience covers life in its wholeness; it is not merely a sensory-perceptive matter. Imagination, which is mostly constituted of manipulation of diagrams (Stjernfelt 2007), is experience as well. Therefore, Peirce takes into account both *inner* and *outer* experience. Of course, semiosis is hardly ever a strictly inner or outer practice of an organism. Semiosic reality is supra-subjective (Deely 2001, 2009; Bains 2006); the action of signs is not bounded within mentality or non-mentality. As such, Peirce's semiotics rejects the mind dependent/mind independent ontological distinction, which was taken for granted by philosophical modernity starting with Locke and Descartes (Deely 1982, 2009). Pragmatism fundamentally argued that being is continuous throughout mentality and non-mentality, this distinction not being ontological. A living organism is engaged in semiosis and thus its being is relational. Semiosis is continuous triadic interaction. The three termini of a relation of

signification cannot be separated from each other: they have their being only within the relation.

The distinction between Peirce's notion of pragmatism and that of James and Dewey consists in that for Peirce pragmatism is only a principle of logic. One of its formulations is as follows: "Pragmatism is the principle that every theoretical judgment expressible in a sentence in the indicative mood is a confused form of thought whose only meaning, if it has any, lies in its tendency to enforce a corresponding practical maxim expressible as a conditional sentence having its apodosis in the imperative mood" (CP 5.18).

Peirce also named it "critical common-sense" (CP 5.494); his intention was that of developing a doctrine of natural logic. James and Dewey did not intend to develop a system of logic, but rather an overcoming of modern dualisms by a theory of knowledge based on a more comprehensive notion of experience. Since the version of pragmatism of Peirce's students became quickly more popular than his own, Peirce renamed his doctrine from *pragmatism* to *pragmaticism* (CP 3.414).

On the pragmaticist account, taking into consideration that experience is semiosis, to be is to be in relation of signification. According to Peirce, semiosis is the best explanation for the emergence of life, being coextensive with life and essentially characterizing it:

> In short, the problem of how genuine triadic relationships first arose in the world is a better, because more definite, formulation of the problem of how life first came about; and no explanation has ever been offered except that of pure chance, which we must suspect to be no explanation, owing to the suspicion that pure chance may itself be a vital phenomenon. In that case, life in the physiological sense would be due to life in the metaphysical sense. (CP 6.322)

On a Peircean account, experience is life itself, personal history. Semiosis defines life. This hypothesis was further welcomed by two brands of theoretical semiotics, namely, biosemiotics (biological semiotics, coined in Stepanov 1971, for the present understanding of the term see Kull 2005) and edusemiotics (semiotics of education, coined by Danesi in Semetsky 2009). The semiotic approach to biology brought a new perspective on life, turning away from the modern understanding of organism as functional mechanism. The first biological theory by means of signs, belonging to Jakob von Uexküll (1926), already was a holistic approach to life, whereby life would not be reduced to mechanist functions (computation). Jakob von Uexküll explained the essential role of and close relation between signification and life by the realization that with the entities we interact, with anything at all, we can interact in the respect that they are meaning carriers. An entity can serve as a terminus for various signs.

A stone can have a "path tone," together with the many stones constituting a road but it can acquire a "throwing tone" if one throws it towards an attacking dog. The physical and chemical changes that the stone suffers in this process are minor if any at all, but something essential changed the stone: "a new meaning was impressed upon it" (von Uexküll 1934: 140).

The realization of the close connection and coextensiveness of life and semiosis further on leads to a non-mechanistic, holistic biology. The way in which *things* come to signify in an organism's environment determines the life of the organism. A bone may be either food or a weapon for the same individual, according to circumstances. This meaningful shaping of the constituting parts of one's environment leads to the realization of the close connection and coextensiveness of life and semiosis. Jakob von Uexküll's concept of *Umwelt*, because it explains the environment of an organism in terms of sign-relations, proved itself a cornerstone concept for the project of a semiotic biology. It implies a non-mechanistic, holistic account of biology: "Whosoever wants to hold to the conviction that all living things are only machines should abandon all hope of glimpsing at their environments" (Uexküll 1934: 41).

The same hypothesis was embraced by edusemiotics. Stables stated the simple observation which is the cornerstone of edusemiotics: "If all living is semiotic engagement, then learning is semiotic engagement" (Stables 2006: 375).

Therefore, on this account, life and learning are coextensive. They are symptoms of each other. A living organism is recognized as something that is learning.

Gough and Stables (2012) argue that interpretation is a matter of adaptation. Interpretation (or semiosis), the action that has as result an Interpretant, is what we refer to in common language by "learning": when we learn the (semiotic) environment we readapt according to new parameters that evolutionary criteria set.

Stjernfelt (2011, 2014) considers that evolution itself had to adapt to structures of signification, such as, for instance, propositions. This is coherent with Peirce's teleology, whereas *telos* is set from within the system according to present conditions (experience). Learning reveals what is next to be learned, and this evolutionary learning is continuous.

The semiotic notion of experience underpins the assumption that learning is interpretation, and, as such, it is a matter of adaptation. This led Peirce to the idea that pedagogy is a practical science. Since it is adaptation itself, the experience of learning, or, to be more precise, the learning evoked by an experience has to be understood in the context of semiosic evolution. Peirce's semiotics implies an experience based philosophy of education grounded in his theory of evolution.

2 Pedagogy: A practical science

According to Peirce we only learn by experience, we learn because we are immersed in infinite semiosis. He also considered that we only learn the art of teaching by a practical experience of it.

For Peirce the characteristic feature of science is that it is observational (CP 1.238). This implies that there is a type of experience such as observation. What can be observed is the subject of science, humans' inquiry into, and towards, knowledge. Peirce, continuing the Aristotelian tradition of the medieval divisions of science, divided the sciences into two main branches: theoretical and practical (CP 1.239). This implies that there are two types of observation, theoretical and practical. Observation generally can be abductive, deductive, or inductive.

Abductive (or retroductive) theoretical observation, the logical operation of "provisional adoption of hypothesis" (CP 1.68) underpins the retrospective sciences, the redefining of hypotheses according to findings, and the active science of mathematics, which is the active science of advancing new ideas *par excellence*.

Deduction, which consists in a mental manipulation of diagrams (CP 1.66), is found in mathematics but it mostly characterizes philosophy (coenoscopic science), which "contents itself with observations such as come within the range of every man's normal experience, and for the most part in every waking hour of his life" (CP 1.241). We perform deduction (at least) in every moment of awareness, starting from the hypotheses we developed so far in order to understand existence. Abduction and deduction together sketch an *Umwelt*. The difficulty of philosophy stands in that it observes objects that might be so obvious that are difficult to rethink of.

Induction, which asserts "the value of a ratio" by testing the results of deduction (CP 1.67), mostly underpins the idioscopic sciences, which require a special type of observation, such as a methodology, often implying special training, tools for measuring, etc. (CP 1.242). It "consists in describing and classifying the ideas that belong to ordinary experience or that naturally arise in connection with ordinary life, without regard to their being valid or invalid or to their psychology" (CP 8.238). This is where Peirce places disciplines such as psychology, sociology, linguistics, and all the other disciplines developed from philosophy. This is where modern philosophy tended to place pedagogy as well. This is not so in Peirce's case though.

Peirce described the other main branch of sciences, the practical sciences, as sciences "for the uses of life" (CP 1.239). He placed pedagogy (*pedagogics*) under this branch of science. It is the first example that Peirce gives among a disordered

enumeration of practical sciences, which are "well-recognized sciences now *in actu*, as pedagogics, gold-beating, etiquette, pigeon-fancying, vulgar arithmetic, horology, surveying, navigation, telegraphy, printing, bookbinding, paper-making, deciphering, ink-making, librarian's work, engraving, etc." (CP 1.239). This means that pedagogy is not the subject of psychology, sociology, or anthropology, perspectives by which modernity used to approach it.

What the activities within the branch of practical sciences have in common is that they cannot be taught on the basis of a theoretical background or any systematic approach at all. Peirce's theoretical sciences correspond to the medieval liberal arts and the practical sciences correspond to the medieval utilitarian arts. The practical sciences can be labelled as *vocational*. At a first glance this might be discouraging for pedagogy, or at least for the prospect of developing a semiotic of pedagogy. By placing pedagogy here Peirce explained that one cannot be taught how to teach. This statement, actually, is a precious insight for pedagogy and philosophy of education generally. In this way Peirce stated that one can only meliorate her ability of teaching through the practical experience of actually teaching, or, perhaps, through observing others teaching. There is no systematic way of teaching the science of teaching. It is a matter of intimate knowledge, difficult if not impossible to communicate. One can of course, show to another her methods of teaching, engraving, or deciphering but there is no methodological teaching involved. It comes down to the observer to discover the tools of the trade.

I argue that a broad look at Peirce's work reveals that this assumption about the science of teaching is a cornerstone of his semiotics. According to Peirce, signification grows, it evolves *ad infinitum*. Signs grow not by being taught to do so, but by learning themselves, in a certain sense. On a Peircean account, Stjernfelt argued that evolution itself had to adapt to structures of signification (2011, 2014). This can be taken as a definition of learning, as it defines the specific character that qualifies a phenomenon of semiosis as learning: adaptation to signification.

3 Evolutionary semiosis and learning

Peirce's semiotics is a triadic teleological phenomenology. In a letter to Lady Welby he explained that his idioscopic research led to the identification of the three modes of being (CP 8.328). *Being*, in this sense is phenomenological. Semiosis (the semiotic account of experience) proceeds in conformity with Peirce's three phenomenological categories, termed Firstness, Secondness,

and Thirdness. Briefly, Firstness is populated by monads, Secondness by dyads, and Thirdness by triads. Even though semiosis is infinite it is fully described by three categories. The definition of semiosis underpins Peirce's observation that a triad is irreducible to a number of dyads and monads while graphs of a higher degree are reducible to triads. The three categories are defined as follows:

> Firstness is the mode of being of that which is such as it is, positively and without reference to anything else.
>
> Secondness is the mode of being of that which is such as it is, with respect to a second but regardless of any third.
>
> Thirdness is the mode of being of that which is such as it is, in bringing a second and third into relation to each other. (CP 8.328)

Even though the three phenomenological categories correspond to three modes of being, existence does not fall under any of these three categories. Real existence is a triadic sign-relation of the three and none of the three is *a priori* to the syncategorematic. This triad is the sign-relation. The sign has an element of Firstness, namely, the Representamen, an element of Secondness, which is the Representamen's Object, and an element of Thirdness, the mediation of Representamen and Object into Interpretant. Thus, signs are what populate reality: "all this universe is perfused with signs, if it is not composed exclusively of signs" (CP 5.448). A semiotic account of the Universe is an Universe of relations of signification, a web of signs. Since being itself is triadic relation any of its three indispensable termini can be analyzed categorically. Thus, Peirce found nine sign types. Stjernfelt also explains that Peirce found nine sign types that describe being because each terminus of a triad can be analyzed in three aspects: "As the sign consists of three components it comes hardly as a surprise that it may be analyzed in nine aspects – every one of the sign's three components may be viewed under each of the three fundamental phenomenological categories" (Stjernfelt 2007: 25).

3.1 Firstness: Learning

Peirce identified monads with qualities. Therefore, Firstness is the category of qualities, and, as such, of pure possibility, freedom, and chance. It has no structure, and, like any of the three categories, it is impossible to think of it isolated from the other two. We cannot represent chaotically, unobjectified, continuums of quality. Firstness is too simple to think of:

> Firstness is the mode of being which consists in its subject's being positively such as it is regardless of aught else. That can only be a possibility. For as long as things do not act upon one another there is no sense or meaning in saying that they have any being, unless it be that they are such in themselves that they may perhaps come into relation with others. The mode of being a *redness*, before anything in the universe was yet red, was nevertheless a positive qualitative possibility. And redness in itself, even if it be embodied, is something positive and *sui generis*. That I call Firstness. We naturally attribute Firstness to outward objects, that is we suppose they have capacities in themselves which may or may not be already actualized, which may or may not ever be actualized, although we can know nothing of such possibilities [except] so far as they are actualized. (CP 1.25)

Therefore, in signification, the elements of Firstness will manifest in relations among qualities. The relation of sharing of qualities is termed similarity (Stjernfelt 2007: 75). Mere similarity does not constitute a relation of signification, but once to a similarity a direction is added one of the most basic types of signification is embodied. If *x* is similar with *y* it means that *x* can signify *y*. If *x* signifies *y* it does not necessarily imply that *y* signifies *x*. Because signification is a matter of use, that is, because "a sign is only a sign *in actu* by virtue of its receiving an interpretation" (CP 5.569) signification is not necessarily bidirectional. Similarity is bidirectional. Similarity with a direction, similarity *in actu*, constitutes the simplest relation of signification. This phenomenon of signification due to similarity is called iconicity (Stjernfelt 2007: 75). Peirce chose the term Icon, arguably a proper choice from an etymological point of view (on the medieval concept of icon see Lock 1997), for the sign of similarity:

> An *Icon* is a sign which refers to the Object that it denotes merely by virtue of characters of its own, and which it possesses, just the same, whether any such Object actually exists or not. It is true that unless there really is such an Object, the Icon does not act as a sign; but this has nothing to do with its character as a sign. Anything whatever, be it quality, existent individual, or law, is an Icon of anything, in so far as it is like that thing and used as a sign of it. (CP 2.247)

The only sign that has a more simple constitution even than the Icon is the Qualisign, a signifying quality. While the Icon, in its Firstness, has an element of Secondness, namely, the direction of signification, the Qualisign lacks this element of Secondness. However as soon as a Qualisign is used in some sense, it acquires a direction of signification, and, therefore, a Qualisign cannot be used without evoking an Icon. Therefore, iconicity is the most basic signification that we encounter in our *Umwelten*, in our waking hours of life. Peirce identified ten classes of signs, resulting from combinations of his basic nine sign types, that we encounter in actual experience. The first class coincides with the Qualisign type. However, the Qualisign as a class is not a sign that is a quality,

but a "quality in so far as it is a sign" (CP 2.254), that is a quality within a sign. By identifying the Qualisign as a phenomenon of experience Peirce states that any sign needs to have inherent qualities. He explained that "Since a quality is whatever it is positively in itself, a quality can only denote an object by virtue of some common ingredient or similarity; so that a Qualisign is necessarily an Icon." (CP 2.254)

This leads to acknowledging the important role that Icons play in learning. According to Peirce the icon is the sign by which we can learn more than what actually constitutes it: "For a great distinguishing property of the icon is that by the direct observation of it other truths concerning its object can be discovered than those which suffice to determine its construction" (CP 2.279).

On account of this Stjernfelt considers that "the most decisive feature in icons at all" is "the fact that they are the only signs through the contemplation of which it is possible to learn more" (2007: 78). Hence, iconicity evokes learning. One of the potentialities of the Icon is that it can evolve into a Predicate (Rheme, as Peirce also refers to the Predicate). A Predicate is necessarily developed upon an Icon:

> The only way of communicating an idea is by means of an icon; and every indirect method of communicating an idea must depend for its establishment upon the use of an icon. Hence, every assertion must contain an icon or set of icons, or else must contain signs whose meaning is only explicable by icons. The idea which the set of icons... contained in an assertion signifies may be termed the predicate of the assertion. (CP 2.278)

The Predicate (or Rheme) is a sign of Firstness that, in its Firstness, presents an element of Thirdness. Prediction (or predication) is part of our continuous deduction characterizing our waking life:

> Five minutes of our waking life will hardly pass without our making some kind of prediction; and in the majority of cases these predictions are fulfilled in the event. Yet a prediction is essentially of a general nature, and cannot ever be completely fulfilled. To say that a prediction has a decided tendency to be fulfilled, is to say that the future events are in a measure really governed by a law. (CP 1.26)

Since Firstness is the category of infinite possibility, signification of Firstness is highly fertile in potential for learning. Iconicity is therefore the source for creativity. Stjernfelt considers that, even though in many cases the discovery of similarity might be a trivial observation, what we usually look upon as a creative idea consists in discovery of similarities as well. The sharing of a quality by two phenomena can be obvious and not necessarily useful but also insightful and not necessarily obvious:

> The fact that it has never before been asserted that this orange on the table before me is similar in shape to the moon (given a certain granularity of similarity classes), might cause sensible souls to see me as a genius for creating metaphors, but, modestly, it seems strange that this similarity should be something created by me. I merely discover (no great effort) this similarity by applying a certain *tertium comparationis* (a circle, give or take a certain rate of deformation). In rare cases, of course, it may take great pains to establish a new complicated *tertium comparationis* to see a similarity (Newton discovering the similarity between the movement of the apple and of the heavenly bodies, Eliot discovering the similarity between cruelty and the growth of April flowers). (Stjernfelt 2007: 57)

Once a similarity was discovered, once a sign comes into play, it cannot be undone. After it occurred for the first time that the movement of celestial bodies is similar in certain aspects with the falling of an apple it is very difficult to deny it. The changing of such hypotheses is never their refutation merely, but, according to how signification expands from the hypothesis within the continuously evolving learning phenomena, the hypothesis might be subjected to abduction, and, thus, modified. Abduction is mostly a play of Icons.

From this perspective something is possible if it can be the Interpretant of an Icon. That an Icon of a table, and an Icon of a unicorn are possible is evidence that a table and a unicorn are real possibilities. An Icon of a *round square* is not possible because between *round* and *square* there is no similarity that can be applied as predicate. *Round* cannot be predicate for *square* or vice versa. Signification of Firstness is, therefore, the domain of real possibilities:

> The idea of First is predominant in the ideas of freshness, life, freedom. The free is that which has not another behind it, determining its actions; but so far as the idea of the negation of another enters, the idea of another enters; and such negative idea must be put in the background, or else we cannot say that the Firstness is predominant. Freedom can only manifest itself in unlimited and uncontrolled variety and multiplicity; and thus the first becomes predominant in the ideas of measureless variety and multiplicity. (CP 2.302)

Biosemiotics defined life as *local plurality* (Kull 2007), measureless variety and multiplicity in some sense. Life cannot be measured. Therefore, neither can learning. A biological science that measures life reduces life to mechanisms and the same would an educational philosophy do to learning by trying to measure it. This is what attempts at evaluating students do, ultimately. This is the implication of the two assumptions that, on the one hand signification is infinite (CP 2.92), unlike mere information (Eco 1976), and that life is semiotic engagement. To assert what another learned is ultimately impossible. An organism does not have access to another organism's intimate knowledge, to its intimate life. The *Umwelt*, as much as it belongs to a species, belongs also to

an individual. The *Umwelten* of two individuals of the same species will be very similar, essentially more similar than the *Umwelten* of two individuals of different species. However, the *Umwelten* of each individual is unique and unrepeatable no matter how close to identical two individuals are physiologically. They are nevertheless distinct and therefore engaged in different phenomena of signification, to some degree. Therefore, a teacher cannot expect to have full access to a student's knowledge. Neither can a teacher simply *put* or *add* an understanding upon a student's understanding. On a semiotic account learning does not consist in an addition of information, but in semiosis by which the horizon of real possibilities expands for an organism. This is manifested by (1) the individual organism's reshaping of her hypotheses (abduction), which leads to (2) the possibility of performing new deductions and, therefore, (3) new inductions.

3.2 Secondness: Teaching

Learning starts as Firstness, in absolute freedom. The phenomenon of learning, as a phenomenon of signification occurring in absolute freedom, cannot be subjected to any limitation. This implies some problems for teaching, which borders the freedom of random exploration. Teaching is objective, that is it points out specific objects of knowledge that a learner has to inquire about. As such it is described by signification of Secondness, which consists in actual, brute dyadic action:

> The actuality of the event seems to lie in its relations to the universe of existents. A court may issue *injunctions* and *judgments* against me and I not care a snap of my finger for them. I may think them idle vapor. But when I feel the sheriff's hand on my shoulder, I shall begin to have a sense of actuality. Actuality is something *brute*. There is no reason in it. I instance putting your shoulder against a door and trying to force it open against an unseen, silent, and unknown resistance. We have a two-sided consciousness of effort and resistance, which seems to me to come tolerably near to a pure sense of actuality. On the whole, I think we have here a mode of being of one thing which consists in how a second object is. I call that Secondness. (CP 1.24)

Teaching is such a two-sided consciousness. It is a reaction between student and teacher: one who is learning becomes aware of another's *brute* action of imposing a different learning. Teaching, as such, is externally imposed learning. As a dyadic reaction teaching has no reason. Teaching appears to be meaningless because it imposes learning on an already learning subject. All the more, it obscures learning since it imposes a different learning than one already in

process. The student is a knowing subject in her own right, there is no justification for an externally imposed switch from one object of her learning to another. Yet, society, learning institutions, and the teacher impose on her something which might not fit with her *Umwelt*. Her signifying world might not nurture an interest for the objects the teacher is having her learn. For example, in her waking time one might be enjoying looking closely at flowers and swimming and for her own self there is no justification for solving equations. Yet, the teacher demands that she looks at equation instead. It is *brute* action, without any reason.

Teaching is mostly characterized by indexicality, signs that point out to a certain object:

> An *Index* is a sign which refers to the Object that it denotes by virtue of being really affected by that Object. It cannot, therefore, be a Qualisign, because qualities are whatever they are independently of anything else. In so far as the Index is affected by the Object, it necessarily has some Quality in common with the Object, and it is in respect to these that it refers to the Object. It does, therefore, involve a sort of Icon, although an Icon of a peculiar kind; and it is not the mere resemblance of its Object, even in these respects which makes it a sign, but it is the actual modification of it by the Object. (CP 2.248)

Indices can only be developed upon Icons. Teaching understood apart from learning is an empty concept. It is useless to think of teaching independently of some learning and, in the same time, the two manifest a contradiction. Any dyadic relation presents a contradiction between its two termini. From a Peircean perspective an incomplete triad is meaninglessness. Thirdness is the category of meaning, of mediation between three elements. A dyad is an incomplete triad. Learning and teaching in light of each other, or a student-teacher relation, are absurd. The question that arises is "why teach someone who is already learning?" As argued above, the iconically preponderant learning that any organism does, according to its own semiotic capabilities (stemming from shape of body, size, the stream of personal experience, etc.), is an effective and creative expansion of and into signification. The organism can discover signification and develop predicates on its own. An answer to the question stands in that, as explained above, the absolute freedom of iconic signification is not perturbed by any thresholds between fictional and non-fictional reality: both a table and a unicorn are possible. Arguably, organisms have to adapt to non-fiction in a peculiar way. It is a matter of survival that a human being can abduct and deduct whether there is an actual, non-fictional tiger behind the bush in front of her. Not distinguishing between fiction and non-fiction is mostly regarded as pathological. Signification as actuality becomes necessary therefore. Stables (2012) explains that what makes learning possible is also what sets boundaries

to it, an idea which Peirce touched upon as well (CP 5.613): "It is an important truth little acknowledged in educational theory that that which makes knowledge and understanding possible – our interpretive frameworks including our assumptions and prejudices – is also that which limits them" (Stables 2012: 47).

The predications that one discovers by herself, by simply being alive and engaging with the environment, also limit her understanding. She develops and *Umwelt* that might be incompatible in some regards to other *Umwelten*. This is why in some cases a student might not have much to gain from listening to a teacher: they do not discover in their *Umwelten* a common ground by which signification can evolve.

Semiotics accounts that reality, being of one piece, both evokes infinite possibilities and restricts them according to its own syntax. The contradiction between learning and teaching still remains. Historically, society proved to look upon genuine, valuable abduction as pathological as well. We can invoke examples from Socrates to Galileo Galilei and to Charles Peirce and Albert Einstein.

Learning is evoked by freedom but by necessity it requires an actual restrictive imposition, teaching. A way of trying to solve the learning/teaching contradiction is that of teaching within the conditions of learning. According to Peirce's categories actual objects are constituted by qualities, not the other way around. This is to say that the indices that education imposes on a learner have to be developed upon the learner's icons. Only an icon can develop into a predicate. To have learned something is to be able to use it as a logical predicate. If the student cannot find potential predicates in the teacher's discourse learning is obscured. This is certainly so, there is no secret in that teaching something that has no similarity to something previously known is useless. An iconless index is pointless: nothing pointing at nothing. It is almost irrelevant to teach about horses to one who has never seen a horse or a depiction of a horse (Nöth 2014: 447). An index can evolve into a Symbol by signifying its Object by an association of ideas, but an iconless Symbol is an empty concept, a floating in void, functionless variable. There is no point in teaching chemistry in Spanish to a learner who does not understand Spanish.

Using something as a predicate proves to have learned it. However, testing whether a student has learned a specific concept, a specific structure of signification, is impossible because signification is not repeatable. However, because of its general character, signification can be replicated. Signs can be used through their replicas, which are signs in their turns. A phenomenon of signification identical with another one is impossible, but the hypothesis of iconicity accounts that phenomena of signification can and ought to be similar.

If something is not similar with everything else within the Universe of signs it does not belong to this Universe. Anything that is possible, at least in this Universe, is similar to everything else. For this reason a teacher must not search for identity between her knowledge and that of the student: there is no identity. Their knowledge can be similar though, that is, they have to find iconic signification relating their knowledge. Once similarities are discovered between teacher and student they become accessible to each other because they can develop predicates together. This opens the possibility for performing abduction caused by the knowledge of the other: the student and the teacher can change their own understanding because they have access to another web of signs, the knowledge of the other.

3.3 Thirdness: Learning and teaching mediated

To teach upon someone else's signification, iconic or otherwise, it is very difficult if not impossible. We do not have access to another organism's life. What another organism learned freely, by chance, is not accessible to me. Signification (experience) is not repeatable. The question still stands: why and how to teach?

The answer lies in Peirce's third category, in signification of Thirdness. The mediation of learning and teaching is the rationale of the relation. We learn by chance and we teach because of necessity. Chance and necessity are criteria belonging to the first two phenomenological categories. According to Peirce, as the sign is threefold, evolution is as well. The first two criteria of evolution are chance and necessity. The modes of evolution by the criteria of chance and necessity Peirce termed *tychasm* and *anancasm* (CP 6.302). Since chance and necessity evoke learning and teaching and they are a First – Second dyad there has to be another criterion of evolution which mediates this dyad towards Thirdness. This criterion, according to Peirce, is love (*agape*), and the mode of evolution driven by love is agapasm:

> Three modes of evolution have thus been brought before us: evolution by fortuitous variation, evolution by mechanical necessity, and evolution by creative love. We may term them *tychastic* evolution, or *tychasm, anancastic* evolution, or *anancasm,* and *agapastic* evolution, or *agapasm*. The doctrines which represent these as severally of principal importance we may term *tychasticism, anancasticism,* and *agapasticism*. On the other hand the mere propositions that absolute chance, mechanical necessity, and the law of love are severally operative in the cosmos may receive the names of *tychism, anancism,* and *agapism*. (CP 6.302)

This triadic teleological evolution of signification is the cornerstone to Peirce's semiotics and to his view on education. Evolution of signification starts from relations among signifying qualities, Icons, leading up to the Argument sign type:

> Therefore, if you ask me what part Qualities can play in the economy of the universe, I shall reply that the universe is a vast representamen, a great symbol of God's purpose, working out its conclusions in living realities. Now every symbol must have, organically attached to it, its Indices of Reactions and its Icons of Qualities; and such part as these reactions and these qualities play in an argument that, they of course, play in the universe – that Universe being precisely an argument. In the little bit that you or I can make out of this huge demonstration, our perceptual judgments are the premises *for us* and these perceptual judgments have icons as their predicates, in which *icons* Qualities are immediately presented. (CP 5.119)

The argument is the fully developed sign, signifying its Interpretant in its Thirdness: "An *Argument* is a sign which distinctly represents the Interpretant, called its *Conclusion,* which it is intended to determine" (CP 2.95).

All the other sign types partake in its constitution. Signification grows towards the Argument. The Argument is mostly thought of as copulations of propositions, which are constituted by Indices, having the role of subjects, and a Predicate. It can also be a Symbol (a general inferred from an actual similarity) used as a Predicate. The Argument is always infinitely distant, even though by learning we asymptotically approach it more and more.

Stjernfelt (2007) describes the Peircean account of the Universe as a physiology of arguments. The category of Thirdness is populated by universals, also termed generals, laws, and tendencies. Peirce understood laws as tendencies, not rigid functions which repeat invariantly. Interpretants, mediation generally, are tendencies of the semiotic Universe. This is why Peirce's teleology is not fixed in pursuing one established goal, but *telos* itself varies according to evolution of signification. Induction depends on the outcomes of deduction which depends on the outcomes of abduction and so on in never-ending loops. These loops are circular, but not identical with each other. They are spiral, coming closer and closer to Truth, to the ultimate Argument which is always infinitely distant. The Argument, itself being beyond understanding, gives the Universe purpose, and, therefore, signification.

The purpose of learning and of education is to pursue the Universe as argument. The practice of teaching is justified and, according to Peirce, it is only possible by *agapism*, evolution by love. Both argumentation and agapism are matters of Thirdness. This implies that signification can only evolve towards argumentation by the principle of agapism. This is the quintessence of a Peircean approach to education and the practice of teaching. Signification is

continuous, a stream, and chance and necessity are always present: "At any time, however, an element of pure chance survives and will remain until the world becomes an absolutely perfect, rational, and symmetrical system, in which mind is at last crystallized in the infinitely distant future" (CP 6.33).

Agapasm holds that love transcends (mediates) chance and necessity, not that it eradicates them. Peirce's semiotics is a triadic logic, by this denying the principle of excluded third (Semetsky 2005). Mediation is not the dismissal of the mediated termini. Peirce termed this doctrine of continuity *synechism* and he states that synechism "calls for" *agapistic* evolution (CP 6.289). For two reasons it might seem strange that Peirce finds love to be the ultimate criteria of evolution. Firstly, it is quite a challenging, novel idea itself. Secondly, there is a persisting confusion about Peirce's logic and particularly about his central idea that signification is continuous. By stating that synechism calls for agapism he explained that because the Universe constitutes in continuous relations it is founded and can only evolve by love, by a going out of the self. As for the first objection, if the idea of love being a criterion for evolution is strange for the modern mind, Peirce would simply invoke his usual dismissal of modern skepticism by abduction: "Let us not pretend to doubt in philosophy what we do not doubt in our hearts." (CP 5.265)

4 Pedagogy revisited: Learning and loving

In Section 2, I explained that for Peirce pedagogy is a practical science. It can only be meliorated by practice. Peirce's evolutionary, teleological semiotics offers the insight by which pedagogy is practiced: engagement in learning and teaching has to be characterized by love. This is so because love is the only possibility of growth. To love is to go out of the self, in search for the other, it is expansion of signification *par excellence*. For Peirce love is the only possibility of growth. His sources for this idea are St Apostle John's scriptural writings, where the idea that *Divinity* is *love* is clearly articulated (1 Jn 4). Peirce explained:

> Everybody can see that the statement of St. John is the formula of an evolutionary philosophy, which teaches that growth comes only from love, from I will not say self-*sacrifice*, but from the ardent impulse to fulfill another's highest impulse. Suppose, for example, that I have an idea that interests me. It is my creation. It is my creature; for as shown in last July's *Monist,* it is a little person. I love it; and I will sink myself in perfecting it. It is not by dealing out cold justice to the circle of my ideas that I can make them grow, but by cherishing and tending them as I would the flowers in my garden. The philosophy we draw from John's gospel is that this is the way mind develops; and as for the cosmos, only so far as it yet is mind, and so has life, is it capable of further evolution. Love,

> recognizing germs of loveliness in the hateful, gradually warms it into life, and makes it lovely. That is the sort of evolution which every careful student of my essay "The Law of Mind" must see that *synechism* calls for. (CP 6.289)

Growth comes only from love, for Peirce there is no other source for growth. As well, Learning is growth. Learning, teaching, and scientific observation are activities pursued by human beings. Science is a mode of experience characteristic for humans: "Such being the essence of science, it is obvious that its first offspring will be men – men whose whole lives are devoted to it" (CP 1.236).

Having in mind that semiosis is taken as the explanation for the emergence of life and that signification is continuous growth, an interconnection between life, learning, and love is becoming clear. Learning has science as its purpose and Peirce regards it as a vital phenomenon, a matter of metabolism: "Let us remember that science is a pursuit of living men, and that its most marked characteristic is that when it is genuine, it is in an incessant state of metabolism and growth" (CP 1.232).

Science is not an abstract endeavor that would be better practiced by purely objective, algorithmically functioning machines. *Living humans* observe, research, and endlessly perfect abduction to scientific argumentation. Argumentation is strictly bounded to agapism, they are both phenomena of Thirdness, of mediation. Agapism is the principle by which signification can grow towards the Argument. On this account, arguably, life is the Universe's way of discovering itself. On the cosmological level of evolution something, perhaps an *agapic* drive, led the Universe to discover itself. As long as within the Universe there was no consciousness or no way of life at all, it could know itself. Living beings are part of the physiology of arguments and inherit the logical syntax of this physiology. Discovery, knowledge, a capacity of living beings generated an exponential acceleration of evolution. Some living beings, among which human beings, developed their *Umwelt* by the experiences of teaching and researching. Such modes of signification growth are particular to some species and even some individuals and Peirce understands science as a personal matter. As an Interpretant, as a phenomenon of growing tendency, knowledge belongs to the future self: "This reference to the future is an essential element of personality. Were the ends of a person already explicit, there would be no room for development, for growth, for life; and consequently there would be no personality. The mere carrying out of predetermined purposes is mechanical" (CP 6.157).

Life, in its richness of variety and multiplicity, life as local plurality, can learn. The particular mode of scientific learning is already personal as, arguably, love is as well. The Learning – Teaching contradictory dyad is mediated in a Learning – Teaching – Science (research) triad. It is a semiosis. Research, the

mediation, gives teaching a rationale. This rationale is love, because love makes growth possible. When a student and a teacher practice scientific observation they are doing so together, their phenomenal worlds overlap (Stables 2012) and they can signify together. The purpose and sole rationale of teaching is not the mere addition of information to the existing knowledge of a knowing subject, but cultivating love. On account of Peircean semiotics love generates variety and multiplicity, enriches life, that is. Life is the *sine-qua-non* for learning. We do not love facts or abstract ideas, but we love people, persons who are close to us:

> The movement of love is circular, at one and the same impulse projecting creations into independency and drawing them into harmony. This seems complicated when stated so; but it is fully summed up in the simple formula we call the Golden Rule. This does not, of course, say, Do everything possible to gratify the egoistic impulses of others, but it says, Sacrifice your own perfection to the perfectionment of your neighbor. Nor must it for a moment be confounded with the Benthamite, or Helvetian, or Beccarian motto, Act for the greatest good of the greatest number. Love is not directed to abstractions but to persons; not to persons we do not know, nor to numbers of people, but to our own dear ones, our family and neighbors. "Our neighbor," we remember, is one whom we live near, not locally perhaps but in life and feeling. (CP 6.288)

Like semiosis, love is circular. It is not a matter of ethics, but of life. It makes learning possible by revealing beauty. Knowing, discovering the physiology of arguments mesmerizes us:

> The Universe as an argument is necessarily a great work of art, a great poem – for every fine argument is a poem and a symphony – just as every true poem is a sound argument. But let us compare it rather with a painting – with an impressionist seashore piece – then every Quality in a Premiss is one of the elementary colored particles of the Painting; they are all meant to go together to make up the intended Quality that belongs to the whole as whole. That total effect is beyond our ken; but we can appreciate in some measure the resultant Quality of parts of the whole – which Qualities result from the combinations of elementary Qualities that belong to the premisses. (CP 5.119)

Being always *beyond our ken*, our observation of the Universe is not a necessity that can be satisfied. The Universe *makes sense* because semiosis is always infinite (Nöth and Santaella 2011). As such, knowing and learning are not necessities, in a mechanical sense, but vital phenomena. The rationale of the student – teacher relation is not that of adding information or revealing explanations, but a cultivation and mutual practice of love which leads to growth of signification. If we could satisfy, consume all possibilities of signification by accumulation of information reality would be meaningless. The *Umwelten* of teacher and student come together, they are enlarged, and they discover each other. Intersubjective experience is possible because reality is populated with

suprasubjective being. Stables refers to this semiosic capacity as *overlapping of phenomenal worlds* (Stables 2012). Love alone is a reason, the Argument, for intersubjective engagement. It reveals the insufficiency of the self, "for self-love is no love" (CP 1.287), and its vital need for relation to otherness, thus generating local plurality and it leads to self-sacrifice, not for a functional necessity such as the survival of the species, of a social group or of some cultural values, but for the sake of the other herself: "For it is not knowing, but the love of learning, that characterizes the scientific man" (CP 1.44).

Peirce does not use the predicate *love* to refer to the mere appreciation of the activity of learning. Learning implies love for another person, a student or a teacher, as love is directed towards persons and to love one-self does not allows the possibility of growth. The love of learning is love for the teacher, for the one from whom the self learns. The love of self is only mechanical necessity (Secondness), not mediation towards the other and growth of signification (Thirdness). On this account, love and science, as surprising as this might be for modern philosophy and for the modern ideal of an objective science, make each other possible. Therefore, the key to a Peircean, semiotic pedagogy, is engagement in love. Thus, pragmaticist pedagogy claims that to love the other, the student or the teacher, is the practical experience that evokes, justifies, and fulfils education.

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